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WE CLAIM AS OUR INVENTION:

1. A method for determining coordinates of images of marks in a volume dataset, said marks being disposed on a surface of a subject and said volume dataset containing the images of the marks and an image of at least a part of the subject containing the surface on which the marks are disposed, comprising the steps of:

segmenting the image of the surface;

transforming the volume dataset so that the segmented image of the surface is transformed into a plane;

generating an image dataset substantially comprising pixels of the image of the surface after transformation into the plane and pixels of the images of the marks;

determining coordinates of the images of the marks in the image dataset; and

determining coordinates of the images of the marks in the volume dataset.

2. A method as claimed in claim 1 comprising determining the coordinates of the images of the marks in the image dataset and in the two-dimensional image dataset by filtering said image dataset.

3. A method as claimed in claim 2 comprising filtering said image dataset with a filter matched to said marks.

4. A method as claimed in claim 2 comprising filtering said image dataset according to the minimum square error sum.

5. A method for determining coordinates of images of marks in a volume dataset comprised of a plurality of consecutive computed tomography slice images of a subject in which image data in each slice image are described with Cartesian coordinates, and wherein the marks are disposed on a surface of the subject, and

wherein the volume dataset represents images of the marks and an image of at least a part of the subject having a surface on which the marks are disposed, said method comprising the steps of:

performing a coordinate transformation for each slice image from said Cartesian coordinates to polar coordinates relative to a line extending through the image of the subject, said line being oriented substantially perpendicularly to the slice images, thereby obtaining transformed sliced images;

determining contours in each of said transformed slice images allocated to the surface of the subject in that transformed slice image;

generating an image dataset substantially comprising pixels of the image of the surface after transformation into a plane and pixels of the images of the marks;

generating a two-dimensional image dataset by re-extracting image data representing the images of the marks in a region parallel to the imaged surface;

determining coordinates of the images of the marks in the two-dimensional image dataset; and

re-transforming the coordinates of the images of the marks back into the coordinates allocated to the volume dataset.

6. A method as claimed in claim 5 comprising determining the coordinates of the images of the marks in the image dataset and in the two-dimensional image dataset by filtering said image dataset.

7. A method as claimed in claim 6 comprising filtering said image dataset with a filter matched to said marks.

8. A method as claimed in claim 6 comprising filtering said image dataset according to the minimum square error sum.

9. A method as claimed in claim 6 comprising filtering said image dataset to cause at least one location of the image of each mark to emerge as a local maximum.

10. A medical apparatus comprising:

a medical imaging device for obtaining a volume dataset from a subject representing an image of at least a portion of the subject containing a surface on which a plurality of marks are disposed, and images of the marks;

a navigation system for relating coordinates of the volume dataset to coordinates of the subject by a coordinate transformation during a registration; and

said navigation system segmenting the image of the surface, transforming the volume dataset so that the segmented image of the surface is transformed into a plane, generating an image dataset substantially comprising pixels of the image of the surface after transformation into the plane and pixels of the images of the marks, determining coordinates of the images of the marks in the image dataset, and determining coordinates of the images of the marks in the volume dataset.

11. A medical system as claimed in claim 10 comprising a filter for filtering the image dataset to determine the coordinates of the marks in the image dataset and in the two-dimensional image dataset.

12. A medical system as claimed in claim 11 wherein said filter is matched to the marks.

13. A medical system as claimed in claim 11 wherein said filtering filters according to the minimum square error sum.

14. A medical system as claimed in claim 10 wherein said navigation system includes a position sensor for identifying the marks for the registration.

15. A medical system as claimed in claim 8 wherein said position sensor is an automatically optically detectable mark.

16. A medical system as claimed in claim 10 wherein said medical imaging device is a first medical imaging device, and further comprising a second medical imaging device for obtaining an image of the subject, and wherein said data processing system fades an image obtained with said second medical imaging device into an image allocated to the volume dataset.

17. A computed tomography system comprising:

a computed tomography imaging device for obtaining a volume dataset of a subject representing a plurality of consecutive computed tomography slice images of the subject, wherein image data in each slice image are described with Cartesian coordinates, and wherein marks are disposed on a surface of the subject and the volume dataset represents images of the marks and an image of at least a part of the subject having the surface on which the marks are disposed;

a data processing system supplied with said volume dataset, said data processing system storing said volume dataset;

a navigation system for relating coordinates of the volume datasets to coordinates of the subject by a coordinate transformation during a registration; and

said navigation system performing a coordinate transformation for each slice image from said Cartesian coordinates to polar coordinates relative to a line extending through the image of the subject, said line being oriented substantially perpendicularly to the slice images, thereby obtaining transformed sliced images, determining contours in each of said transformed slice images allocated to the surface of the subject in that transformed slice image, generating an image dataset substantially comprising pixels of the image of the surface after transformation into a plane and pixels of the images of the marks, generating a two-dimensional image dataset by re-extracting image data representing the images of the marks in a region parallel to the imaged surface, determining coordinates of the images of the marks in the two-dimensional image dataset, and re-transforming the coordinates of the images of the marks back into the coordinates allocated to the volume dataset.

18. A computed tomography system as claimed in claim 17 comprising a filter for filtering the image dataset to determine the coordinates of the marks in the image dataset and in the two-dimensional image dataset.

19. A computed tomography system as claimed in claim 18 wherein said filter is matched to the marks.

20. A computed tomography system as claimed in claim 18 wherein said filtering filters according to the minimum square error sum.

21. A computed tomography system as claimed in claim 18 wherein said filter causes at least one location of the image of each mark to emerge as a local maximum.

22. A computed tomography system as claimed in claim 17 wherein said navigation system includes a position sensor for identifying the marks for the registration.

23. A computed tomography system as claimed in claim 17 wherein said position sensor is an automatically optically detectable mark.

24. A computed tomography system as claimed in claim 17 further comprising a separate medical imaging device for obtaining images of the subject and for fading images obtained with the medical imaging device into an image allocated to the volume dataset.